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मानक

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“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

IS 10961-3 (1984): Diagnostic X-ray tube with rotating anode, Part 3: Type DRA 3 [LITD 9: Electromagnetic Compatibility]



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“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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Indian Standard

SPECIFICATION FOR DIAGNOSTIC X-RAY TUBE WITH ROTATING ANODE

PART 3 TYPE DRA 3

1. Scope — Specifies the characteristics and dimensional requirements of high-power X-ray tubes with rotating anode Type DRA 3, with two foci, each focus having different target angle.

2. Terminology — For the purpose of this standard, the terms and definitions given in IS : 1885 (Part IV/Sec 2)-1973 'Electrotechnical vocabulary: Part IV Electron tubes, Sec 2 X-ray tubes (first revision)' shall apply.

3. Type Designation — The X-ray tubes shall be designated by three letters, followed by a numeral, the first letter indicating the intended use of the tube, that is, diagnostic, therapeutic, etc, the second and the third letter indicating the type of anode, that is, stationary or rotating. The numeral shall indicate the serial number of the particular type.

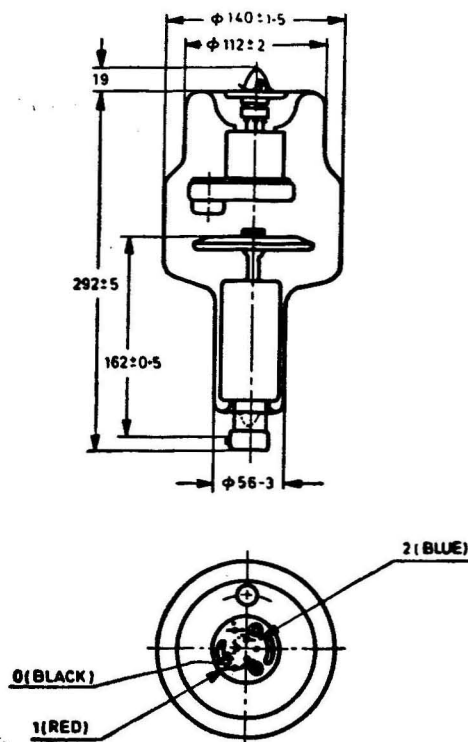
Example:

DRA 3 shall mean diagnostic X-ray tube with rotating anode, Type 3.

4. Dimensions — The dimensions of the tube shall be within the limits specified in Fig. 1. The outline and shape of the tube may not necessarily correspond to the figure.

4.1 The colour code for the terminals at the cathode end shall be as follows:

Common, Black, Small Focus, Red, Large Focus, and Blue.



All dimensions in millimetres.

FIG. 1 DIAGNOSTIC X-RAY TUBE WITH ROTATING ANODE

Adopted 29 May 1984

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Gr 1

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5. Characteristics

	For 1.2 mm Focus	For 2 mm Focus
a) Type of operation	Full wave rectifying from single phase or three phase.	
b) Maximum rated peak voltage shall be at least	150 kV	150 kV
c) Rated power at 0.1 s (300 W preloaded anode)	30 kW, <i>Min</i>	50 kW, <i>Min</i>
d) Optical focal spot [measured in accordance with IS : 4096-1973 Method of measurement of optical focal spot size of X-ray tubes (<i>first revision</i>)]	1.2 mm × 1.2 mm, <i>Max</i>	2 mm × 2 mm, <i>Max</i>
e) Target angle (measured by the use of optical projector)	17° to 19°	16° to 18°
f) Type of cooling	Oil immersed	
g) Anode heat storage capacity (calculated in accordance with IS : 3154-1965 Specification for X-ray tubes, diagnostic type)	170 000 Hu	
h) Anode speed (measured by stroboscopic method)	2 800 rev/min approx at 150 Hz	
j) Inherent filtration	0.7 mm Al, <i>Min</i>	
k) Mass	3.5 kg, <i>Max</i>	

6. Protection — The housing shall be in accordance with IS : 6567-1972 'Radiation protection for an X-ray tube in a protective tube housing, operating between 10 kV and 400 kV'.

7. Information to be Furnished by the Manufacturer

- a) *Tube rating characteristic*
 - i) Maximum current (mA) time(s) characteristic for all types of operation,
 - ii) Filament characteristic,
 - iii) Emission characteristic, and
 - iv) Cooling characteristics.
- b) *Recommended details of housing suitable for the tube.*

EXPLANATORY NOTE

This standard covers the requirements of the X-ray tube to be used for purpose of the radiography and fluoroscopy in medical diagnostic X-ray apparatus of the static type. Various parts of this Indian Standard on diagnostic X-ray tubes with rotating anode cover the following types:

- Part 1 Type DRA 1
- Part 2 Type DRA 2
- Part 3 Type DRA 3
- Part 4 Type DRA 4
- Part 5 Type DRA 5

The diagnostic X-ray tubes with stationary anode are covered under IS : 3154-1965.